

**CLAIMS**

1. A computer-based method for prediction of behavior in a complex system  
2 using input data comprising a plurality of data points, and a set of possible model  
parameters, the method comprising the steps of:
- 4 (a) inputting the plurality of data points and the set of model parameters into  
a computer;
- 6 (b) defining a first quantity of model parameters within the set of model  
parameters comprising a first iteration of model parameters, the first quantity of  
8 model parameters being adapted to fit the measured data;
- (c) determining a goodness-of-fit at a predetermined minimum level for each  
10 model parameter of the first quantity of model parameters;
- (d) eliminating each first quantity model parameter whose presence or  
12 elimination fails to change the goodness-of-fit at the predetermined minimum level;
- (e) defining a next quantity of model parameters larger than the first quantity  
14 of model parameters;
- (f) adding the next quantity of model parameters to a remaining group of the  
16 first quantity model parameters to define a next iteration of model parameters;
- (g) determining the goodness-of-fit at the predetermined minimum for model  
18 parameter of the next iteration;
- (h) eliminating each model parameter of the next iteration of model  
20 parameters whose presence or elimination fails to change the goodness-of-fit at the  
predetermined minimum level;
- 22 (i) repeating steps (e) through (h) until a final iteration in which the  
goodness-of-fit meets the predetermined minimum; and
- 24 (j) providing an output comprising the model parameters remaining after the  
final iteration, wherein the remaining model parameters comprise the smallest subset  
26 of the set of possible model parameters.

Add  
A1

Add  
B2